Curtiss-Wright Nuclear Division

Announces New Version Release

PEPSE

Version 90

December 2025

Curtiss-Wright is excited to announce the release of the new version of Scientech's PEPSE in December 2025. The Version 90 release includes many new features and enhancements as requested by our clients and end users. These improvements are designed to enhance PEPSE's user productivity while increasing its thermal analysis capabilities. PEPSE's annual releases sustain its leading role as the most powerful predictive and design analysis tool on the market.

The demand for optimization technology has advanced significantly over the past few years, driven by competitive generation, the environment, and the need to connect critical thermal performance data with end users who contribute to the thermal efficiency of the power plant. PEPSE with its annual upgrades is pushing the envelope and leading the industry with state-of-the-art, optimization technology through accurate modeling, analysis and simulation software to improve the heat rate of generation assets. Accurate models producing a few tenths of one percent heat rate improvement can make a difference of several hundreds of thousands of dollars in fuel reduction costs or in increased generation sales annually for a single unit.

Specifically, PEPSE's best achievable and "What-If" analysis allow performance engineers to establish key performance indicators (KPIs) that produce the lowest cost of production for dispatch operations, e.g., capacity marketing. Additionally, PEPSE allows the evaluation of equipment and process changes required for justification of capital expenditures, e.g., coal to gas fuel conversion. With the release of Version 90, PEPSE continues to be the industry benchmark for optimizing power plants' thermal efficiency and process cycles. This has been proven by the selection of PEPSE by many utilities as their gold standard in its ability to realize improved heat rate and generation goals.

We have listened to our clients and incorporated lessons learned from our technical support and services into our annual PEPSE upgrades. The markets are changing, and Curtiss-Wright is listening and changing our software accordingly.

PEPSE's Version 90 provides engineers with the ability to readily and accurately analyze and optimize a system's efficiency, and plants that employ it derive a number of direct and important benefits. PEPSE is your key to accurately analyzing plant performance and identifying ways to increase generation and reduce heat rate. PEPSE helps to eliminate causes of inefficiency allowing a plant to produce every possible kilowatt and conserve every possible BTU thus providing for reductions in plant emissions and carbon footprint. This also lowers operating costs through higher efficiency, fewer repairs, less downtime, and lower fuel costs.

PEPSE program enhancements have been improved to enhance its ease of use, e.g., speed, reporting capabilities, displays/graphics, data reduction, help functionality, error corrections, and "user friendly" operation. These enhanced features complement its business value for a complete performance improvement program.

PEPSE V90 Enhancement Summary

PEPSE upgrades are implemented to enhance user productivity and introduce the latest calculation standards as provided by the power production industry. Outlined below is a summary of several of the major features of Version 90.

PEPSE Program Enhancements

In the PEPSE thermodynamic analysis program the following enhancements have been made:

- Increase the CTI Cooling Curve data sizes as follows:
  - Cooling water flowrates 5->10
  - Wet Bulb Temperatures 10->20
  - Humidities 5->10
  - Range 5->10
- Allow interpolation between Schedules. User can now associate a "W" parameter with each Schedule and then provide a list of interpolation-enabled schedules and a corresponding "W" value in the Schedule Variable dialog
- Increase Schedule data sizes as follows:
  - X(50)->X(100)
  - Y (50,9)->Y(100,20)
  - Z(9)->Z(20)
- New PEPSE variable "CNSTNT" to specify a constant value for Z in Schedules. Prior to PEPSE V90, specifying a constant Z could only be achieved by defining and referring to another variable (usually an Operational Variable) with a fixed value
- Increase max Schedule Tables allowed from 200 to 999
- Increase max Schedule Variables allowed from 200 to 999
- Increase max operation IDs allowed from 701 to 999
- Increase max generator allowed to 15

On the graphical interface the following enhancements have been made:

- Allow display/edit of full CTI table in separate window. This makes the manipulation of large CTI datasets more convenient
- Improve navigation between stages in HRSG component dialog. The up/down arrow and mousewheel are now effective in navigating the HRSG component dialog
- Enable horizontal scrolling in MMI via shift+mousewheel
- Allow sorting by any field in Datalist dialogs
- Make keyboard Delete button achieve the same effect as pressing the MMI Delete button (when displayed)
- Made the CGT Compressor tab show an hourglass while loading as this dialog can sometimes seem frozen in models with many stages

PEPSE Error Corrections

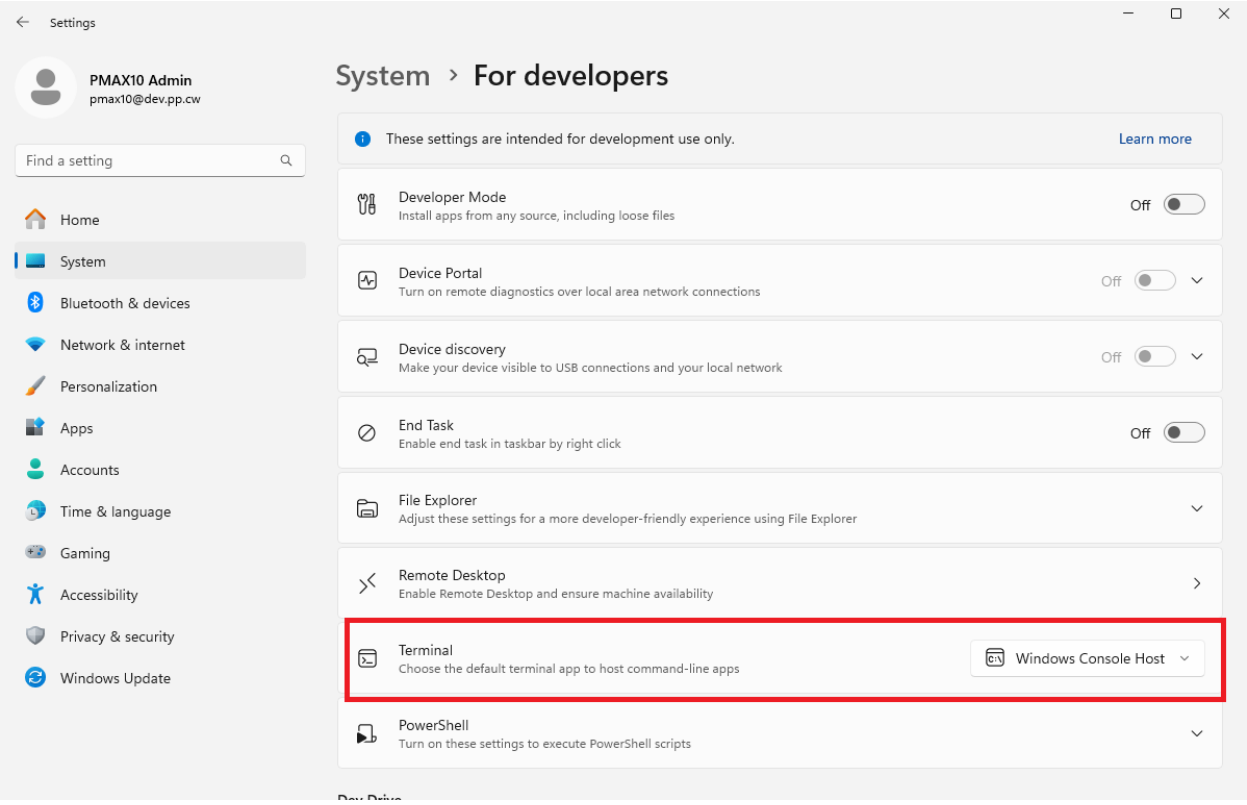
In the PEPSE thermodynamic analysis program, the following error corrections have been made:

- Fixed a couple of issues related to the position of certain heat exchange components in the HRSG where the stream connectivity written to the job file was incorrect and caused model failures. For example, placing a drum/evaporator as the lowest heat exchanger component in a HRSG causes model failures prior to PEPSE V90
- Fixed bug related to metric units handling in macro sensitivity studies. When the Z value in a sensitivity study is a controlled value, and the model uses metric units, the Z values in the study may not be correct in PEPSE89 and prior versions
- Reset the steam table fixup count for each new case. Prior to PEPSE V90, the steam table fixup count was accumulated across all cases until a total count of 5000 is exceeded in which case the model would fail. PEPSEV90 resets the fixup count on a case-by-case basis. The max fixups per case is 5000. This allows multi-case models to be more likely to converge when steam table issues are encountered
- Fixed problem with Heat Transfer Length units of measure in report incorrectly reported in inches when FWH tuning in a metric model
- Fixed bug where sensitivity study gave different results depending on the order of inputs. This was due to the model converging before a switch from performance to design was made which caused the design case not to run. PEPSE will now warn the user if a model converges before switching from performance to design mode
- Fixed incorrect enthalpy conversion factor Btu/lb->KJ/Kg from 2.326009 -> 2.326
- Fixed problem with tuning a FWH UALLDC when there is no tuning on the UALLC

On the graphical interface, the following error corrections have been made:

- Fixed bug where reordering stages in the HRSG was not captured in the changelog
- Fixed bug where Global Data->Special Features setup changes was not captured in the changelog
- Fixed issue where Notes could not be edited when the changelog is displayed
- Fixed bug where streams would not maintain their correct position if they were moved to overlap other streams on the MMI
- Fixed problem where a HRSG could be added to a locked set
- Fixed an issue where warning/error messages would not remain visible on the MMI when the schematic was moved around/resized etc.
- Fixed problem where streams could be left "dangling" on the MMI by not connecting the output end to any component
- Fixed the pan tool which was broken in PEPSE V89

PEPSE Version 90 will run on Windows 7 and newer operating systems; and Windows Server 2008 and newer operating systems, including 32-bit or 64-bit versions. **NOTE: Windows 11 includes new features that effect how some applications interact with the display. In order for PEPSE to properly display its calculation windows on Windows 11, the "Terminal" setting must be set to "Windows Console Host" as follows:**



We look forward to working with you and continuing to provide the most powerful off-line thermal performance modeling tool available. Upgrading to Version 90 will provide enhanced functionality of the leading performance analysis and simulation tool, PEPSE, and demonstrate a valued return on your investment.

To upgrade to PEPSE Version 90 or to receive more information, contact please contact Josh Bartlett at (208) 497-3547 or jbartlett@curtisswright.com.